

WHAT IS CLAIMED IS:

1. A modified pigment product comprising a pigment having attached at least one group comprising the formula:



wherein X is attached to the pigment and comprises at least an aromatic group or at least an alkyl group, Nion comprises at least one type of non-ionic group, R is hydrogen or comprises an aromatic group or an alkyl group, and p represents an integer of from 1 to 500.

2. The modified pigment of claim 1, wherein Nion is a C₁-C₁₂ alkyl group or a C₁-C₁₂ alkylene oxide group.

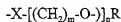
3. The modified pigment product of claim 1, wherein said non-ionic group further comprises a functional group.

4. The modified pigment product of claim 1, wherein said non-ionic group is a glycol group.

5. The modified pigment product of claim 1, wherein X is an aromatic group.

6. The modified pigment product of claim 1, wherein p is 1 to 50.

7. A modified pigment product comprising a pigment having attached at least one group comprising the formula:



wherein X comprises an aromatic group or an alkyl group, m is an integer of from 1 to 12, p is an integer from 1 to 500, and R is hydrogen or comprises an alkyl group or an aromatic group.

8. The modified pigment product containing a pigment having attached at least one group comprising the formula:



wherein X is attached to the pigment and comprises at least an aromatic group or at least an alkyl group; A represents an alkylene oxide group of from about 1 to about 12 carbons; p represents an integer of from 1 to 500; and R represents hydrogen, a substituted or unsubstituted alkyl group or

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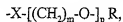
a substituted or unsubstituted aromatic group wherein A can be the same or different when p is greater than 1.

9. The modified pigment product of claim 8, wherein X is an aromatic group.
10. The modified pigment product of claim 8, wherein X is substituted with at least one functional group.
11. The modified pigment product of claim 8, wherein X is substituted with a carboxylic group or a sulfonate group.
12. The modified pigment product of claim 8, wherein p is from 1 to 25.
13. The modified pigment product of claim 8, wherein p is from 26 to 50.
14. The modified pigment product of claim 8, wherein R is an aromatic group.
15. The modified pigment product of claim 8, wherein m is 2, p is 44-45, R is a methyl group, and X is a benzoyl group.
16. The modified pigment product of claim 8, wherein m is 2, p is 22, R is a methyl group, and X is a benzoyl group.
17. The modified pigment product of claim 8, wherein m is 2, p is 44-45, R is hydrogen, and X is a benzoyl group.
18. The modified pigment product of claim 8, wherein m is 2, p is 7, R is a methyl group, and X is a benzoyl group.
19. A modified pigment product comprising a pigment having attached at least one group comprising the formula:
-X-[polymer]R,
wherein X is attached to the pigment and comprises at least an aromatic group or at least an alkyl group; "polymer" comprises repeating monomer groups or multiple monomer groups or both, optionally having at least one -X' group; R represents hydrogen, a bond, or comprises at least an

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alkyl group or at least an aromatic group; wherein X' comprises at least an aromatic group or at least an alkyl group, and each X' and X can be the same or different; and the total amount of monomer groups that comprise "polymer" is not greater than about 500 monomer repeating units, and when R represents a bond, R optionally bonds to said pigment.

20. An ink composition comprising a) at least one liquid vehicle; b) at least one modified pigment product comprising a pigment having attached at least one group comprising the formula:



wherein X is attached to the pigment and comprises at least an aromatic group or at least an alkyl group, m represents an integer of from 1 to 12, p represents an integer of from 1 to 500, and R represents hydrogen, or comprises an alkyl group or an aromatic group.

21. An ink composition comprising a pigment having attached at least one group comprising the formula:



wherein X is attached to the pigment and comprises at least an aromatic group or at least an alkyl group; A represents an alkylene oxide group of from about 1 to about 12 carbons; p represents an integer of from 1 to 500; and R represents hydrogen, a substituted or unsubstituted alkyl group or a substituted or unsubstituted aromatic group wherein A can be the same or different when p is greater than 1.

22. The ink composition of claim 21, wherein said liquid vehicle is aqueous.

23. The ink composition of claim 21, wherein said liquid vehicle is non-aqueous.

24. The ink composition of claim 21, wherein said ink composition is an inkjet ink composition.

25. The ink composition of claim 21, further comprising at least one humectant, at least one binder, at least one dye, at least one biocide, at least one penetrant, at least one surfactant, or combinations thereof.

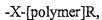
26. The ink composition of claim 21, wherein said pigment is carbon black, graphite, vitreous carbon, finely-divided carbon, activated carbon, activated charcoal, or mixtures thereof.

27. The ink composition of claim 21, wherein said pigment is carbon black.

28. The ink composition of claim 21, wherein said pigment comprises a white pigment, a black pigment, a blue pigment, a brown pigment, a cyan pigment, a green pigment, a violet pigment, a magenta pigment, a red pigment, a yellow pigment, shades thereof, or combinations thereof.

29. The ink composition of claim 21, wherein X represents an aromatic group.

30. An ink composition comprising a) at least one liquid vehicle; b) at least one modified pigment product comprising a pigment having attached at least one group comprising the formula:



wherein X is attached to the pigment and comprises at least an aromatic group or at least an alkyl group; "polymer" comprises repeating monomer groups or multiple monomer groups or both, optionally having at least -X' group; R represents hydrogen, a bond, or comprises an alkyl group or an aromatic group; wherein X' comprises at least an aromatic group or at least an alkyl group; and each X' and X can be the same or different, and the total amount of monomer groups that comprise "polymer" is not greater than about 500 monomer repeating units.

31. The ink composition of claim 30, wherein said X represents an aromatic group.

32. The ink composition of claim 30, wherein said X is substituted with at least one functional group.

33. The ink composition of claim 30, wherein said R represents an aromatic group.

34. The ink composition of claim 30, wherein p represents an integer of from 1 to 25.

35. The ink composition of claim 30, wherein said "polymer" is a polyamide, polycarbonate, polyelectrolyte, polyester, polyether, polyimide, polyolefin, polystyrene, polyacrylate, polyurethane group, polyvinyl (alcohol), or mixtures thereof.

36. The ink composition of claim 30, wherein said "polymer" is a polyolefin group, a polycarbonate group, a polyelectrolyte group, a polyether group, a polyimide group, a

polyurethane group, a polystyrenic group, a polyacrylate group, a polyamide group, a polyester group, polyvinyl (alcohol), or combinations thereof.

37. An ink composition comprising at least one liquid vehicle and a modified pigment product comprising a pigment having attached at least one group comprising the formula:



wherein X is attached to the pigment and comprises at least an aromatic group or at least an alkyl group; Nlon comprises at least one type of non-ionic group; R represents hydrogen or comprises an aromatic group or an alkyl group; and p represents an integer of from 1 to 500.

38. A method to attach at least one group selected from an organic group or polymeric group onto a plurality of pigment comprising reducing the average particle size of said pigment in a solvent and introducing a) at least one surfactant or polymer comprising said group and having at least one primary amine, b) a nitrite, and c) an acid in sufficient amounts together or in any combination to generate a diazonium salt comprising at least said group, and wherein said diazonium salt reacts with said pigment to attach said at least one group onto said pigment.

39. A method of claim 38, wherein at least a portion of said primary amine dispersant adsorbs onto at least a portion of the pigment.

40. The method of claim 38, wherein said primary amine dispersant further contains at least one non-ionic group.

41. The method of claim 38, wherein two or more different primary amine dispersant are introduced.

42. The method of claim 38, further comprising introducing a second diazonium salt comprising a second organic group.

43. The method of claim 38, wherein said primary amine dispersant comprises an aromatic group or an alkyl group.

44. The method of claim 38, wherein said acid is nitric acid or sulfuric acid.

45. A printing plate comprising: a substrate, a protective layer located onto said substrate, and an infrared or near-infrared radiation-absorptive layer located on said protective layer, wherein said radiation-absorptive layer comprises at least one modified pigment of claim 1.

46. A printing plate comprising: a substrate, a protective layer located onto said substrate, and an infrared or near-infrared radiation-absorptive layer located on said protective layer, wherein said radiation-absorptive layer comprises at least one modified pigment of claim 7.

47. A printing plate comprising: a substrate, a protective layer located onto said substrate, and an infrared or near-infrared radiation-absorptive layer located on said protective layer, wherein said radiation-absorptive layer comprises at least one modified pigment of claim 8.

48. A printing plate comprising: a substrate, a protective layer located onto said substrate, and an infrared or near-infrared radiation-absorptive layer located on said protective layer, wherein said radiation-absorptive layer comprises at least one modified pigment of claim 19.

49. A method of imaging a lithographic printing plate of claim 45, comprising selectively exposing the plate to a laser output in a pattern representing an image to selectively remove or chemically modify at least the radiation-absorptive layer defining the pattern.

50. The method of claim 45, further comprising subjecting the plate to a solvent capable of removing portions of the imaged layer(s) defining the pattern.

51. A method of imaging a lithographic printing plate of claim 46, comprising selectively exposing the plate to a laser output in a pattern representing an image to selectively remove or chemically modify at least the radiation-absorptive layer defining the pattern.

52. The method of claim 46, further comprising subjecting the plate to a solvent capable of removing portions of the imaged layer(s) defining the pattern.

53. A method of imaging a lithographic printing plate of claim 47, comprising selectively exposing the plate to a laser output in a pattern representing an image to selectively remove or chemically modify at least the radiation-absorptive layer defining the pattern.

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54. The method of claim 47, further comprising subjecting the plate to a solvent capable of removing portions of the imaged layer(s) defining the pattern.

55. A method of imaging a lithographic printing plate of claim 48, comprising selectively exposing the plate to a laser output in a pattern representing an image to selectively remove or chemically modify at least the radiation-absorptive layer defining the pattern.

56. The method of claim 48, further comprising subjecting the plate to a solvent capable of removing portions of the imaged layer(s) defining the pattern.

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